

IN THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application.

1-48. (Cancelled)

49. (Currently Amended) A computer program product for determining a property of a manipulation based upon determination of effects of said manipulation on a plurality of different cell types, said computer program product comprising:

code for receiving one or more images of a plurality of components of a plurality of cells, wherein said plurality of cells are of different cell types and wherein said plurality of cells have been exposed to the manipulation;

code for determining a plurality of features of a ~~first component of said plurality of components~~ of said plurality of cells of different cell types and a plurality of features of a second component of said plurality of components;

code for combining ~~said~~ a plurality of features of ~~said first components~~ with a ~~plurality of features of said second component~~ to yield a plurality of descriptors;

code for performing principal component analysis on said plurality of descriptors, whereby said descriptors are reduced to yield a cellular fingerprint;

code for determining properties of said manipulation based upon said analysis;
and

a computer readable storage medium comprising said computer program product ~~for holding the codes~~.

50. (Previously Added) The computer program product of claim 49 wherein said plurality of components are selected from a protein, a protein modification, a nucleic acid, a lipid, a carbohydrate, a sub-cellular structure, and an organelle.

51. (Previously Amended) The computer program product of claim 49 wherein said manipulation comprises applying a chemical factor.

52. (Previously Amended) The computer program product of claim 49 wherein said property comprises toxicity.

53. (Previously Amended) The computer program product of claim 49 wherein said property comprises a mechanism of action.

54. (Previously Amended) The computer program product of claim 49 wherein said property comprises at least one of a plurality of pharmacological properties.

55. (Previously Added) The computer program product of claim 54 wherein said pharmacological properties comprises at least of absorption, excretion, distribution, and metabolism.

56. (Currently Amended) A computer program product comprising a machine readable medium on which is provided program instructions for determining an effect of a manipulation on a plurality of cells of different cell types, the instructions comprising:

code for receiving one or more images of a plurality of components of a plurality of cells, wherein said plurality of cells are of different cell types and wherein said plurality of cells have been exposed to the manipulation;

code for determining a plurality of features of a ~~first component of said plurality of components of said plurality of cells of different cell types and a plurality of features of a second component of said plurality of components;~~

code for combining ~~said at least one of a plurality of features of said first component with at least one of a plurality of features of said second component~~ wherein some of said features are from a first cell type and others are from a second cell type; and

code for performing statistical analysis on said plurality of features wherein said statistical analysis comprises multidimensional representations, principal component analysis, or frequency based representations on at least said combined features to determine the effect of the manipulation on the plurality of cells.

57. (Previously added) The computer program product of claim 56, wherein the manipulation is application of at least one of a chemical factor, a biological factor, an electromagnetic factor, a gravitational factor, a mechanical factor, a thermal factor, a temporal factor, and a nuclear factor.

58. (Cancelled)

59. (Cancelled)

60. (Previously added) The computer program product of claim 56, wherein said first component is a protein, a protein modification, a nucleic acid, a lipid, a carbohydrate, a sub-cellular structure or an organelle.

61. (Previously added) The computer program product of claim 56, wherein the effect of the manipulation is at least one of the following: toxicity, specificity against a subset of tumors, a mechanism of chemical activity, a mechanism of biological activity, interaction with a target protein, an adverse biological effect, an adverse clinical effect, cellular availability, a pharmacological property, a gene expression profile, absorption, excretion, distribution, metabolism, and a pharmacodynamic effect.

62. (Cancelled)

63. (Currently Amended) A computer program product comprising a machine readable medium on which is provided program instructions for predicting properties of a chemical compound based on information about effects of at least one of a plurality of known compounds on a plurality of cells of different cell types, the instructions comprising:

code for receiving one or more images of a plurality of components of a plurality of cells of different cell types that have been exposed to the chemical compound;

code for determining, from the one or more images, multiple descriptors for multiple components of the plurality of cells of said different cell lines, wherein said code for determining a multiple descriptors comprises code for performing principal component analysis on the said multiple descriptors and wherein said descriptors are determined for at least two different cell lines;

code for determining a relationship between said descriptors of said chemical compound with other descriptors of said known compounds; and

code for making an inference about said chemical compound based upon said other descriptors,

wherein said descriptors and other descriptors comprise numeric or logical values.

64. (Previously Added) The computer program product of claim 63, wherein the multiple components are independently selected from the group consisting of a protein, a protein modification, a nucleic acid, a lipid, a carbohydrate, a sub-cellular structure or an organelle.

65. (Previously Added) The computer program product of claim 63, wherein the property that is being predicted is at least one of the following: toxicity, specificity against a subset of tumors, a mechanism of chemical activity, a mechanism of biological activity, interaction with a target protein, an adverse biological effect, an adverse clinical effect, cellular availability, a pharmacological property, a gene expression profile, absorption, excretion, distribution, metabolism, and a pharmacodynamic effect.

66. (Currently Amended) The computer program product of claim 49 wherein said manipulation is selected from the group consisting of applying a hormone, applying a growth factor, applying an extracellular matrix component, applying a virus, ~~applying~~ an electroporation, ~~applying~~ an antisense polynucleotide, ~~applying~~ a gene knock-out, ~~applying~~ a gene overexpression, ~~applying~~ a gene mutation, ~~applying~~ a cell fusion, and combinations thereof